

REMARKS

This Amendment is in response to the Final Office Action mailed October 31, 2007. Claims 17-40 are pending in the application. Claims 17, 21, 25, 29, and 33-40 have been amended. No claims have been cancelled. Claim 41 has been added. Thus, claims 17-40 remain pending. Applicants respectfully requests reconsideration of this application as amended.

The Examiner rejected claim 33-40 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. The Examiner suggested amending claims 33-40 to claim a “computer-readable medium” in order to make the claim statutory (Final Office Action, mailed 10/31/07, page 3). Applicants have so amended the claims. In light of the Amendments, Applicants submit that the rejection of claims 33-40 under 35 U.S.C. § 101 has been overcome, and respectfully request that the Examiner withdraw the rejection of claims 33-40 under § 101.

The Examiner rejected claims 21-22, 24, 29-30, 32, 37-38, and 40 under 35 U.S.C. § 102(b) as being anticipated by Sato et al. (U.S. 2001/0028748). Applicants respectfully disagree.

Sato describes an image processing apparatus that decomposes an image utilizing a wavelet transform section, a quantization section, and an entropy coding section in an encoder (Sato, Figure 1B). The encoder of Sato performs a wavelet transform on an image to convert the image into different subbands or frequency components of an image. The subbands are then segmented into “predetermined units” which Sato describes as blocks of an image that are of a pre-determined size (*See* Sato, paragraph [0297]; Figure 15A). The image blocks are then quantized by a predetermined step, divided into code blocks, and compressed (Sato, paragraphs [0217-0222]).

Claim 21 recites:

An image processing apparatus, comprising:
a segmenting unit to segment an image into one or more regions of data
from the image;

- a generating unit to make the one or more regions segmented by the segmenting unit into components;
- a converting unit to convert the respective components from a first data format to a second data format, where the first and second data formats are different;
- an encoding unit to encode the components converted by the converting unit into code data using a same compression method; and
- a combining unit to combine the code data encoded by the encoded unit into a codestream.

That is, Applicants claim an image processing apparatus that includes a segmenting unit to segment an image into one or more regions of data from the image. The image processing apparatus further includes a generating unit to make the one or more regions segmented by the segmenting unit into components. A converting unit of the image processing apparatus further converts the respective components (i.e., the segmented regions) from a first data format to a second data format, where the first and second data formats are different. An encoding unit and a combining unit are further claimed to encode the components into code data using a same compression method and to combine the code data into a codestream. Applicants respectfully submit that Sato fails to describe each and every feature as claimed.

Applicants recite in part, “a segmenting unit to segment an image into one or more regions of data from the image; [and] a generating unit to make the one or more regions segmented by the segmenting unit into components.” That is, for example, an image is segmented into regions, such as text regions, drawing regions, picture regions, etc. Then, a generating unit makes the segmented regions into components.

The Examiner states that Sato described the Applicants “segmenting unit” because Sato provided for a wavelet transform that decomposes an image into subbands (*See* Final Office Action, page 4 *citing* Sato, Figures 1B-2, 7-2, 17A-2 and Paragraphs [0170-0171]). In the passages cited by the Examiner, Sato describes that an image processing apparatus can use wavelet decomposition to decompose an image into subbands and then divide the subbands into

tiles. The tiles are then quantized and compressed. However, nothing in Sato describes segmenting an image into regions of data (i.e., data regions that correspond to text regions, picture regions, drawing regions, etc.) of an image, as claimed by the Applicants. Rather, Sato provides for decomposing an image into subbands, i.e., specific frequency decompositions, and then creating pre-sized tiles for the subbands. The subband decomposition, however, is not related to different regions of an image or the data regions that correspond to the different regions, as the subband decomposition is performed irrespective image regions and regions of image data. Therefore, because Sato merely provides for a specific method of wavelet decomposition, Sato must fail to describe or even suggest segmenting an image into regions of data for an image and then creating respective components for those data regions as claimed by the Applicants.

Furthermore, Applicants claim in part “a converting unit to convert the respective components from a first data format to a second data format, where the first and second data formats are different.” That is for different components, which are made for different image regions, a converting unit converts the components from a first data format to a differing second data format. The Examiner cites Sato at paragraphs [0218-0219] as describing this limitation (Final Office Action, page 4). However, Sato recites:

[0218] The quantization section 3 quantizes the received coefficients by a predetermined quantization step and outputs indices corresponding to the quantized values. Quantization is described by

$$q = \text{sign}(c) \text{floor}(\text{abs}(c)/\text{DELTA.}) \quad (3)$$

$$\text{sign}(c) = 1; c \geq 0 \quad (4)$$

$$\text{sign}(c) = -1; c < 0 \quad (5)$$

[0219] where c is the coefficient to be quantized. In this embodiment, 1 is included as a value DELTA.. In this case, the transform coefficients input to the quantization section 3 are directly output to an entropy encoding section 4 on the output side without performing actual quantization.

That is, Sato describes that each wavelet coefficient is quantized according to a predetermined formula based on the component. Although the value of the wavelet coefficient may be modified by the quantization formula described by Sato, Sato is silent as to modifying any data formats from a first format to a second differing data format, as claimed by the Applicants. Whereas Applicants claim converting the data format of respective components, Sato merely provides for calculating values of wavelet coefficients from a numerical value c to another numerical value (*See* Formulas (3)-(5) in Paragraph [0218]). Therefore, at best, Sato may provide for the modification of data values in the same data format, but not the conversion of data from a first to a second data format. Thus, Sato also fails to describe “a converting unit to convert the respective components from a first data format to a second data format, where the first and second data formats are different,” as claimed by the Applicants.

Because Sato fails to describe each and every feature as claimed by the Applicants in claim 21, Sato fails to anticipate claim 21 under § 102 for at least the reasons discussed above. Furthermore, independent claims 29 and 37 include similar limitations to those discussed with respect to claim 21, and are therefore similarly not anticipated under § 102. Since claims 22, 24, 30, 32, 28, and 40 depend from one of claims 21, 29, or 37, and include additional features and limitations, claims 22, 24, 30, 32, 28, and 40 are also not anticipated by Sato under § 102.

Therefore, Applicants respectfully request that the Examiner withdraw the rejection of claims 21-22, 24, 29-30, 32, 37-38, and 40 under 35 U.S.C. § 102 in view of Sato.

The Examiner rejected claims 17-20, 23, 25-28, 31, 33-36, and 39 under 35 U.S.C. § 103(a) as being unpatentable over Sato et al in view of Navon et al (U.S. 7,085,422). Applicants respectfully disagree.

Navon describes the identification of pixel kernels in a grayscale image (Navon, column 2, lines 1-23). Kernels with similar values indicate that the pixels are of related image types

(Navon, column 6, lines 9-32). Navon then either creates a mask of all related pixels, or classifies image tiles as certain tile types. The mask or tiles may be compressed differently from one another based on the kernel type and determined image type (Navon, column 5, lines 1-50). However, the determination of related pixels, and the creation of a mask category or tile category, fails to teach or even suggest the segmentation of image data and component creation discussed above with respect to independent claim 21. Navon merely classifies image masks or tiles for compression. Thus, Navon fails to remedy the shortcomings of Sato discussed above. As such, Navon and Sato, alone or in combination fail to teach or suggest each and every limitation as claimed in claim 21. Because claims 17-20, 23, 25-28, 31, 33-36, and 39 include similar limitations and features, claims 17-20, 23, 25-28, 31, 33-36, and 39 are also not rendered obvious by Sato in view of Navon.

Therefore, Applicants respectfully request that the Examiner withdraw the rejection of claims 17-20, 23, 25-28, 31, 33-36, and 39 under 35 U.S.C. § 103 Sato in view of Navon.

New claim 41 has been added. Applicants submit that claim 41 is allowable for at least the reasons discussed above. Furthermore, claim 41 requires an encoding unit to encode the components made by the generating unit into code data using an encoding method based on a component type of each of said components (*See e.g.*, Specification, Figure 6 and paragraph [0053-0054]). Applicants respectfully submit that these features are now shown by Sato and Navon, alone or in combination. Therefore, Applicants respectfully submit that the invention as claimed in claim 41 is allowable.


Accordingly, Applicants respectfully submit that the rejections to the claims have been obviated by the amendments and the remarks and withdrawal of these rejections is respectfully requested. Applicants submit that Claims 17-41 are in condition for allowance and such action is earnestly solicited.

If there are any additional charges, please charge Deposit Account No. 02-2666 for any fee deficiency that may be due.

Respectfully submitted,

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